AD-A284 631

ATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	DATE	3. REPORT TYPE AND DATES COVERED
	17/05/94	Monograph

4. TITLE AND SUBTITLE

THE FIRE SUPPORT COORDINATION LINE-- A CONCEPT BEHIND ITS TIMES? (U)

5. FUNDING NUMBERS

6. AUTHOR(S)

MAJ Michael J. McMahon, USA

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

School of Advanced Military Studies
ATTN: ATZL-SWV
Fort Leavenworth, Kansas 66027-6900
COM (913) 684-3437 AUTOVON 552-3437

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*

This monograph addresses the question of whether the concept of the Fire Support Coordination Line (FSCL) should be included in future joint doctrine. Originally designed as a permissive fire coordination measure to allow commanders to identify a portion of their Area of Operations (AO) which anyone could fire into without the need for coordination, the concept has changed over time to become a more restrictive measure, limiting the ability of the commander to directly influence a portion of his AO. In essence, the FSCL is being used to deconflict fires, rather than to facilitate the integration of complementary capabilities of joint systems and operations. Furthermore, though the FSCL was at one time an appropriate and necessary control measure because of technological limitations, tremendous advances in information-age technology and a new battlefield environment increasingly characterized by non-linear operations have made the concept of the FSCL irrelevant. In fact, the FSCL impedes the JFC from applying joint fires on the battlefield in the most effective and efficient manner possible. The fundamental conclusion of the paper is that the FSCL is a concept behind its time.

14. SUBJECT TERMS

FIRE SUPPORT COORDINATION MEASURES, FIRE SUPPORT COORDINATION LINE, JOINT DOCTRINE, AIR-GROUND OPERATIONS

15. NUMBER OF PAGES 56

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNLIMITED

The Fire Support Coordination Line--A Concept Behind Its Times?

A Monograph
by
Major Michael J. McMahon
Infantry

School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas

Second Term AY 93-94

SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

Major Michael J. McMahon

Title of Monograph: The Fire Support Coordination Line--A Concept Behind Its Times?

Approved by:

Myron J. Griswold
LTC Myron J. Griswold, MS, MMAS — Monograph Director

Gregory Fontenot
COL Gregory Fontenot, MA, MMAS — Director, School of Advanced Military Studies

Philip J. Brookes
Philip J. Brookes, Ph.D. — Director, Graduate Degree Program

Accepted this 6th day of May 1994

ABSTRACT

THE FIRE SUPPORT COORDINATION LINE-- A CONCEPT BEHIND ITS TIME? by MAJ Michael J. McMahon, USA, 56 pages.

This monograph addresses the question of whether the concept of the Fire Support Coordination Line (FSCL) should be included in future joint doctrine. The FSCL was originally designed as a concept to fulfill a requirement for deconfliction of fires between air and ground forces to prevent fratricide. As the concept evolved it became a permissive FSCM to allow the delivery of uncoordinated fires into an area that the ground commander could not reach with his organic fires. The concept has changed over time to become a more restrictive measure, limiting the ability of the commander to influence a portion of his AO directly.

In essence, the FSCL is being used to deconflict fires, particularly at the operational level, rather than to facilitate the integration of complementary capabilities of joint systems and operations. Furthermore, though the FSCL was at one time an appropriate and necessary control measure because of technological limitations, tremendous advances in information-age technology and a new battlefield environment increasingly characterized by non-linear operations have made the concept of the FSCL irrelevant. In fact, the FSCL impedes the JFC from applying joint fires on the battlefield in the most effective and efficient manner possible.

The fundamental conclusion of the paper is that the FSCL is a concept behind its time, and should be eliminated from joint doctrine. Commanders should use boundaries, to include forward boundaries, to achieve unity of effort within their AOs. The Joint Force Commander should control all assets that can be applied as operational fires through an Integrated Tasking Order, and should apportion control of resources to subordinate commanders to accomplish his intent. Within their AOs, commanders should continue to use other FSCM to mold their battlefield. Finally, advances in information technology must be exploited jointly so that commanders can integrate fully the complementary capabilities offered by the service components.

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I. INTRODUCTION

> If, as Services, we get too critical among ourselves, hunting for exact limiting lines in the shadow land of responsibility as between [the Services], hunting for and spending our time arguing about it, we will deserve the very fate we will get in war, which is defeat. We have got to be of one family.[1]

Dwight D. Eisenhower's words in 1950 served to remind soldiers, sailors, airmen, and Marines that the efforts to integrate the services into an efficient joint war machine had only just begun. There was a recognition that the face of battle was changing to such an extent that the historical service parochialism in the United States military establishment must no longer stand in the way of full integration of the application of the elements of military power. The United States had been victorious in World War Two in spite of these parochialisms that had at times significantly interfered with military effectiveness and efficiency in battle. Since then the budget battles in the Department of Defense (DOD) and Congress served to heighten the level of distrust, separation., and antagonism between the services.

Forty-four years later, in spite of several efforts to legislate "jointness", service parochialism still tends to impede the effective and efficient application of combat power. Though there is affirmation by all services that "jointness is good", it is difficult to see this consensus in action. One area that offers tremendous potential for closer integration between the efforts of the services is in the application of fires on the battlefield, particularly at the operational level. The purpose of this paper is to analyze the potential for future use of one of the current methods used to facilitate the integration of joint fires and maneuver, the Fire Support Coordination Line (FSCL), to determine whether it should continue to be included in joint doctrine.

The cornerstone manual for joint operations, Joint Publication 1, states that the overarching concept for joint operations is:

> ...achieving sequenced and synchronized employment of all available land, sea, air, special operations, and space forces--orchestrating the employment of these forces in ways that capitalize on the synergistic effect of joint forces. The objective is the employment of overwhelming military force designed to wrest the initiative from opponents and defeat them in detail.[2]

While the intent of Joint Publication 1 is noble indeed, derivative joint publications describe ways to avoid the total integration of joint forces in battle--methods and procedures to delineate the battlefield so that there is no inherent "jointness". The FSCL is such a measure. The FSCL is described as:

> ... a permissive fire support coordinating measure. It is established and adjusted by appropriate land force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide, both in the air and on the ground. FSCLs facilitate the expeditious attack of targets of opportunity beyond the coordinating measure. Supporting elements may attack targets beyond the FSCL, provided the attack will not produce adverse effects on, or to the rear of, the line. The FSCL is not a boundary--the synchronization of operations on either side of the FSCL is the responsibility of the establishing commander out to the limits of the land force boundary.[3]

From this definition, it appears that the FSCL theoretically allows ground and air commanders to use the most responsive and appropriate means available to attack targets. In practice, however, its definition and use have been interpreted differently by the ground and air services. As will be shown in this paper, it has, in effect, been used as a way to abrogate the joint responsibilities of the services. The Army sees the FSCL as a permissive fire control measure which allows any asset, to include Army Tactical Missile Systems (ATACMS) and AH-64 Apaches, to strike targets of opportunity beyond it without requirement to coordinate with other units, particularly Air Force units. The Air Force sees the FSCL as a more restrictive measure, and wants any units firing past it to coordinate those fires with the Joint Force Air

Component Commander (JFACC), to reduce the chances of fratricide and increase the overall efficiency of targeting.

The significance of the Army-Air Force disagreement was seen vividly during Operation Desert Storm, as the Air Force refused to fly missions other than Close Air Support (CAS) short of the FSCL[4], and did not apportion any sorties for Battlefield Air Interdiction (BAI), designed to support the corps commander's deep attack. This resulted in several lost opportunities, with Iraqi forces escaping through the unintentional "no-fire area" that existed beyond the range of the bulk of the corps weapons, but still short of the FSCL. In effect, the dissenting interpretations of joint doctrine have opened the potential for the enemy to maneuver with impunity in this area. This is contrary to the intent of our doctrine.

> The synergy achieved by synchronizing the actions of air, land, sea, space, and special operations forces in joint operations and in multiple dimensions enables [Joint Forces Commanders] (JFCs) to project focused capabilities that present no seams or vulnerabilities to an enemy to exploit.[5]

By using the FSCL, commanders forfeit a great deal of the potential synergism that results from total integration of the fires and maneuver forces present in the joint force. The net result is that there is a danger of using forces in isolation, thus forfeiting the synergy that results from synchronization.

The FSCL served a useful purpose when it was originally conceptualized as a dividing line between Army and Air Force fires, necessary to prevent fratricide of ground forces as well as air forces. Since the Army had no systems that could fire deep, the FSCL did not stand in the way of synchronization of effort, particularly since doctrine espoused a neat, linear battlefield. However, advances in modern technology and the changing nature of the battlefield have blurred the concepts of "close" and "deep" battle for the ground commander.

Exploitation of information-age technology has resulted in significant enhancements to the commander's ability to influence operations across the depth of the battlefield. The Joint Forces Land Component Commander (JFLCC) can not only see up to 400 kilometers past friendly ground forces, but can deliver fires well into the area which was the exclusive domain of air forces until recently.[6] The corps commander can send Apaches up to 150 kilometers past the Forward Line of Troops (FLOT), and the current version of ATACMS has an unclassified range of over 130 kilometers. This change in the Army's capabilities is significant and, when combined with the doctrinal changes in the Army's concepts for operations on the battlefield first introduced as AirLand Operations in 1990[7] and described in the 1993 version of FM 100-5, means that commanders of joint forces must consider command and control procedures for the full synchronization of all assets capable of interdicting the enemy. General Frederick Franks, commander of the Army's Training and Doctrine Command (TRADOC), and former commander of the U.S. Army's VII Corps during Operation Desert Storm, framed the issue succinctly when he said that we do not want doctrine to stand in the way of technological advance.[8] Technological advances must be woven carefully into current technology. At the same time doctrine must be adapted to make effective use of the potential offered by technological advances in weapon, intelligence, and command and control systems, so that the result is the most effective and efficient application of available military forces.

The other major change to our doctrine that begs the question of the utility of the FSCL is the trend toward non-linearity on the battlefield. The new Army and joint doctrine as espoused in the 1993 versions of FM 100-5, Operations, and JointPublication 3-0, Joint Operations, call for simultaneous attack throughout the depth of the battlefield. The requirements to win the rear, close, and deep battles

simultaneously will cause linear concepts, such as the Forward Edge of the Battlefield Area (FEBA), the FLOT, and the FSCL to become blurred.

> As technology and doctrines have expanded the lethality, tempo, and depth of operations, the potential for conventional forces to conduct nonlinear operations has increased. Linearity refers primarily to the conduct of operations along lines of operations with identified FLOTs. In linear operations, emphasis is placed on maintaining the position of the land force in relation to other friendly forces.[9]

The wider range of options for battlefield organization espoused by full-dimension operations[10] will result in an environment in which there are large gaps between forces, both laterally and in depth. This means more inherent confusion and intermingling of friendly and enemy forces. The implication is that linear solutions to fire support coordination may be irrelevant on the future battlefield.

The writers of joint doctrine acknowledge that the environment of the battlefield may require the JFC to use other than doctrinal procedures to address particular requirements.

> It is not the intent of this publication to restrict the authority of the joint force commander from organizing the force and executing the mission in a manner the JFC deems most appropriate to ensure unity of effort in the accomplishment of the overall mission...This publication is authoritative but not directive...[11]

However, the purpose of joint doctrine is to provide a common framework and a common set of concepts and definitions that can be adapted to the situation facing the JFC. Thus, joint doctrine should not include concepts that can not be applied across the entire spectrum of warfare to facilitate unity of effort by the theater commanders.

The hypothesis of this paper is that joint doctrine for the FSCL is written in such a way that it is subject to different interpretations, thus making it an impediment to effective and efficient application of joint fires on the battlefield. Further, technology and the battlefield environment for mid- to high-intensity conventional

war have changed to such an extent that the traditional concept of the FSCL no longer has relevance. For both of these reasons, the FSCL should be removed from joint doctrine.

Before continuing the discussion of the FSCL, several terms which will be used throughout this paper must be defined so that there is a common basis for discussion. The Air Force flies only three types of force application missions: Strategic Attack, which is beyond the scope of this paper, Air Interdiction (AI), and CAS. An understanding of the difference between the latter two missions is critical to the discussion of the FSCL.

> Air interdiction disrupts, delays, or destroys an enemy's military potential before it can be used against friendly forces.[12]

Air Force doctrine defines CAS as "the application of aerospace forces in support of the land component commander's objectives.[13] This nebulous definition does little to differentiate these fires from interdiction fires, so further definition must be taken from joint doctrine:

> Close Air Support is air action by fixed- and rotary-wing aircraft against hostile targets which are in *close proximity* to friendly forces and which require *detailed integration* of each air mission with the fire and movement of those forces.[14] [italics added]

The key difference between AI and CAS is the degree of synchronization between land and air forces. The level of synchronization of fires is dependent largely on the degree of control a commander has over those fires. According to joint doctrine, control is defined as the regulation of "forces and functions to execute the commander's intent."[15] This definition is different than "coordination", which is to "bring into common action, movement, or condition.[16] The difference is subtle but significant. Control implies direct authority over forces in their application, while coordination is more akin to indirect harmonization of efforts to reach a common

aim. Headquarters, Combined Forces Command (Korea), offers a more succinct description of the difference between control and coordination:

> Control means that the responsible commander has the authority to compel agreement. Coordination means that the responsible commander does not have this authority.[17]

The remainder of this paper will address the usefulness of the FSCL as a concept for joint doctrine. Section II outlines the origins and evolution of the FSCL. Section III discusses the use of the FSCL during Operation Desert Storm. This campaign provides the basis for further discussion since it brought the issue of the FSCL to the forefront of the Army-Air Force debate on this important joint concept. Section IV suggests that the disagreement between the Services regarding the purpose and application of the FSCL which emerged as a result of Operation Desert Storm is irreconcilable. It also addresses the usefulness of the concept in terms of recent changes in technology and the battlefield environment. Finally, Section V concludes with an assessment of the hypothesis stated above, and provides some implications for joint doctrine on enhancing the integration of joint fires on the future battlefield.

II. EVOLUTION OF THE FSCL

> How many a dispute could have been deflated into a single paragraph if the disputants had just dared to define their terms. --Aristotle[18]

Airpower was used in support of ground operations for the first time during World War One. As it was used primarily in a reconnaissance role, with some bombing of easily identified enemy forces, there was little need for coordination with the ground forces. However, by World War Two technological advances allowed a much closer integration of airpower into the ground maneuver scheme. In turn, this closer integration required the development of coordination measures to protect friendly ground forces from the effects of airpower and vice versa.

Given the dearth of air-to-ground communications systems and the prolonged planning time for air missions, the only feasible solution to air-ground coordination was to separate the battlefield between the ground and air forces. This requirement for clear delineation led to the concept of the bomb line, an easily identified linear terrain feature about a mile forward of friendly ground forces. Although some airplanes carried air to ground communications, and could therefore be used in a close support role, the great majority of missions flown in support of ground forces could not communicate directly with the ground forces, and were therefore restricted to dropping bombs past the bomb line.

The most notable use of air-ground coordination during World War Two was during Operation Cobra, the breakout from Normandy by American forces in July, 1944. General Omar Bradley developed a plan for VII Corps to break through the German defenses around the southern flank of the allied beachhead. The objectives were the capture of the Brittany Peninsula and the defeat of the German Seventh Army by encirclement. The plan was for an attack on a narrow front by two infantry divisions, followed quickly by two heavy divisions which would penetrate deeply and

envelop the bulk of the German forces. The integration of airpower was necessary to provide the requisite firepower to overwhelm the German defenses. The Allies had a great deal of success in interdicting German forces just before and during the assault on D-Day. Realizing the great value of airpower, Bradley wanted to support the breakout with the use of the tremendous firepower differential offered by Allied air superiority. Bradley designated a road (the east- west St. Lo-Perriers road) as a line of departure for the ground forces. This line also served as the bomb line for the air forces, with no bombs to be dropped north of the road. Ground forces were withdrawn about 1200 yards to the north of the bomb line for their safety. About 700 fighter-bombers struck targets past the bomb line to a depth of 250 yards, with light bombs only, so as not to make the area impassable for the mechanized forces. Also, eighteen hundred heavy bombers dropped light bombs out to one mile south of the bomb line. Finally, about 400 medium bombers struck targets in depth immediately prior to the ground forces crossing the line of departure.[19]

General Bradley's staff coordinated the plan with all participants and disseminated it in enough time to allow detailed planning. However, the inability to coordinate directly between the ground forces and the air forces had disastrous consequences. Poor weather delayed the attack for several days. On the 24th of July the weather cleared and Bradley ordered the commencemenbt of the attack. However, the weather closed in again and Bradley canceled the attack once more. By this time, however, the heavy bombers had already taken off and could not be recalled. Further, they disregarded Bradley's order to fly parallel to the bomb line and, in order to reduce the duration of enemy air defense fires, flew perpendicular to the line, over friendly forces. In the ensuing bombardment, over 150 American servicemen were killed or wounded. The next day the weather cleared and Operation Cobra began. The bombardment went as scheduled, with the desired effects on the

German defenses. Unfortunately, the heavy bombers once again dropped bombs short of the bomb line, an event which resulted in more than 600 friendly casualties.[20]

The attacking infantry divisions found that though German forces had been hit hard by the bombing, a coherent defense remained. However, when the heavy divisions attacked later the same day, they found that the German defenses in depth had been severely disrupted. American forces penetrated the front-line German divisions by the 27th of July.

Operation Cobra demonstrated that preparation of the battlefield by air bombardment could have significant effects that would enhance the successful maneuver of ground forces. However, it also highlighted some of the limitations in air-ground operations. Most notably, the inability to communicate with the bombers (other than those fighter-bombers in contact with ground forward air controllers) had disastrous and tragic consequences. This led many commanders to be extremely conservative in the use of the bomb line as a divider between air and ground forces by placing it very far forward of friendly troops. It also influenced Army doctrine writers in the post-war era as they sought to minimize the potential for air-to-ground fratricide, even at the expense of effectiveness in air-ground integration.

The use of the bomb line as a measure designed primarily to prevent fratricide continued through World War Two and the Korean War. The 1948 version of FM 6-20, Fire Support, described the bomb line as a line established by the ground commander to facilitate aerial engagement of targets while protecting friendly troops. Aircraft could engage targets beyond the bomb line without coordinating with ground forces, but had to coordinate closely with the ground forces before attacking targets short of the bomb line.[21] Though this was an attempt to increase the flexibility in the use of airpower to support ground operations, it still represented a delineation of the

battlefield into air and ground force realms. Despite advances in communications technology, closer integration was not attempted.

There was no real attempt to more closely integrate ground and air forces into the battle throughout the Cold War. In 1961, the concept of the FSCL appeared in Army doctrine for the first time, serving as a dual-purpose control measure to divide responsibility for fires between the corps and higher echelons and between ground and air forces. The FSCL was:

> ... a no-fire line between corps and higher echelons and a bomb line for ground and air forces. An FSCL may be established by the corps commander to ensure coordination of those fires delivered by forces not under the control of the corps which may affect current tactical operations. When possible, the FSCL should be easy to define on a map and easy to recognize from the air.[22]

Even during the Vietnam War, the focus was on fratricide prevention, rather than on the integration of joint capabilities .

> Because Vietnam was fought on the tactical level of war and entailed firepower and defensive actions, the focus of Army/ Air Force coordination was meant to ensure that fratricide did not occur. The thrust was to deconflict fires, not to integrate them.[23]

However, no degradations in effectiveness were identified because we had such a preponderance of firepower. Further, there were no efforts to attain efficiencies by closer synchronization and integration of air and ground firepower and maneuver during the Vietnam War.

By 1967, the FSCL served only as a coordination measure between air force and ground force fires. Specifically, Army doctrine no longer used the FSCL to delineate responsibility between the corps and higher levels on the battlefield.

> The FSCL ... is a line which takes the place of the bomb line. It is used in relation to air, ground or sea delivered conventional or nuclear weapons. It should be established by the appropriate land (normally the corps) commander in consultation with the Tactical Air Commander or his delegate. It is used to coordinate supporting fire by

> forces not under the control of the appropriate land force commander which may affect tactical operations ... The FSCL should be as close to the forward elements as possible consistent with troop safety and the tactical situation. Furthermore, it should be easy to define on a map and easy to identify from the air.[24]

The trend toward separation of the battlefield between the ground forces and the air forces went even further with the 1977 version of FM 6-20.

> The FSCL is ... [a permissive fire control measure] beyond which all targets may be attacked by any weapons system (including air and nuclear weapons) without endangering friendly troops or requiring additional coordination with the establishing headquarters.[25]

According to this definition, the ground forces commander abrogated his responsibilities for coordination of the battle past the FSCL, even though it fell within his assigned Area of Operations (AO). By defining the FSCL as a permissive fire support control measure, the ground commander allowed commanders of air forces (and Lance and Pershing missiles) to attack targets past the FSCL at will, without even informing the ground commander. No mention was made of the responsibility of the ground commander to coordinate his fires past the FSCL, since the corps could not shoot farther than about 24 kilometers in 1977.

The 1984 version of FM 6-20 continued the intent for the FSCL as a permissive fire support coordination measure, but provided further clarification.

> The FSCL is established by the appropriate ground commander to ensure coordination of fires not under his control but which may effect current tactical operations. The FSCL is used to coordinate the fires of air, ground, and sea launched weapons using any type of ammunition against surface targets ... Supporting elements may attack targets forward of the FSCL without prior coordination with the ground force commander if the attack will not produce adverse effects on or to the rear of the line. Attacks against surface targets short of the line must be coordinated with the appropriate ground forces commander. The purpose of the FSCL is to expedite the attack of targets beyond it. Usually it is established by a corps commander.[26]

This definition supported the emerging AirLand Battle doctrine, which addressed the closer integration of the close and deep battles. Facing a tremendous numerical inferiority on the Central Front of Europe, planners developed a concept to maximize the disruption of Warsaw Pact forces before they were committed to the close battle. The concept of the Joint Attack of the Second Echelon (J-SAK) which emerged allowed ground commanders to deal with more manageable levels of enemy forces in the close battle. The authors of the JSAK concept designed it to coordinate the activities of the Army and Air Force at the operational level in an attempt to affect the momentum of the enemy's second echelon towards the FLOT. It recognized that the land and air commanders were coequals who should consult and coordinate with each other. Under the J-SAK concept the land commander prioritized BAI targets, while the air commander prioritized AI targets and made the final selection of all AI (and BAI) targets.[27] Essentially, J-SAK recognized that closer integration of ground and air forces was needed to deal with the threat posed by the Warsaw Pact's massive numerical advantage. In 1985, the commander of Tactical Air Command, LTG Merrill McPeak, said:

> TAC and TRADOC have now moved beyond "coordination" to a concept and procedures that give the ground commander a leading role in selecting and prioritizing BAI targets on both sides of the FSCL ... And the [Army] Battlefield Coordination Element (BCE) will coordinate employment of organic Army assets used in interdiction, ensuring that air and ground interdiction operations are deconflicted and mutually supporting.[28]

Joint integration of fires moved closer to fruition in 1991 when joint doctrine addressed the subject of the FSCL for the first time. Recognizing that ground forces had the ability to see and strike targets past the FSCL, the definition of the FSCL was modified by joint doctrine writers.

> A line established by the appropriate ground commander to ensure coordination within his assigned areas of operations of fire not under

his control but which may affect current tactical operations. The FSCL is used to coordinate fires of air, ground, or sea weapons systems using any type of ammunition against surface targets. Supporting elements may attack targets forward of the FSCL within the ground commander's assigned area of operations without prior coordination with him, provided the attack will not produce adverse surface effects on or to the rear of the line. Attacks against surface targets short of the FSCL must be coordinated with the appropriate ground commander. *The attack of targets beyond the FSCL by the establishing ground commander should be coordinated with the air component commander.* This coordination is defined as informing and or consulting with the supported air component commander. Inability to effect this coordination will not preclude the attack of targets beyond the FSCL. The placement of the FSCL is usually beyond that area which the ground commander plans to directly influence his operations.[29] [italics added]

Finally, in the 1993 version of Joint Publication 3-0, Doctrine for Joint Operations, the current definition of the FSCL is given:

> Fire Support Coordination Lines (FSCLs) are permissive fire support coordination measures. They are established and adjusted by appropriate land force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide, both in the air and on the ground. FSCLs facilitate the expeditious attack of targets of opportunity beyond the coordinating measure. Supporting elements may attack targets beyond the FSCL, provided the attack will not produce adverse effects on, or to the rear of, the line. The FSCL is not a boundary--*the synchronization of operations on either side of the FSCL is the responsibility of the establishing commander out to the limits of the land force boundary.*[30] [italics added]

This description of the FSCL places the onus for coordination on the ground commander who is responsible for the assigned AO. Any force attacking a target past the FSCL must inform all parties. This definition implies that the ground commander is the coordinating authority for fires past the FSCL but still within his boundary. This seems to be a change in the intent of the FSCL, as the 1991 definition implied that the air component commander was the coordinating authority

past the FSCL. This difference in definitions, while seemingly a matter of semantics, has led to significant disagreement between the Army and Air Force over the fundamental precepts of air-ground coordination of fires.

The current definition of the FSCL is much improved over the earlier definitions. However, despite its apparent clarity, it is still subject to different interpretations by the Army and the Air Force. The next section will discuss the different interpretations of the FSCL that were applied during Operation Desert Storm, which resulted in the misunderstandings that are the basis of the current debate between the Army and the Air Force regarding the FSCL. Since the current version of Joint Publication 3-0 is based largely on the experiences of Operation Desert Storm, an analysis of that campaign in terms of the use of the FSCL will serve to address the discontinuities in joint doctrine that impede the effective and efficient application of joint fires.

III. THE FSCL AND OPERATION DESERT STORM

> As a guiding principle, JFCs should exploit the flexibility inherent in joint force command relationships, joint targeting procedures, and other techniques to resolve the issues that can arise from the relationship between interdiction and maneuver. When maneuver is employed, JFCs need to carefully balance doctrinal imperatives that may be in tension including the needs of the maneuver force and the undesirability of fragmenting theater air assets.[31]

According to joint doctrine, operational fires and operational maneuver are co-equals and must be integrated to accomplish the JFC's intent. During Operation Desert Storm, there was a perception that conflicting priorities of the ground and air commanders made such integration problematic. Operational fires are applied against targets that have direct impact on the conduct of a campaign or major operation. These targets are usually located at such depth that they are attacked mostly by air- and missile-delivered munitions. They are planned and synchronized at the operational level of command, normally under the purview of the JFACC. Operational maneuver is accomplished by ground or naval forces inside assigned AOs to secure operational advantages in position, or to exploit tactical success to achieve operational results.[32] The cause of conflict is that successful operational maneuver generally entails the integration of tactical fire support with tactical maneuver. Some of the tactical fire support is provided by the JFACC in the form of CAS, AI, and reconnaissance. This requirement for dual-purposed functionality of aircraft often places the two operational functions, fires and maneuver, in competition for the limited aircraft available. The JFC must therefore prioritize his competing operational functions. During Operation Desert Storm these conflicting priorities were seen vividly in the disagreement between the Air Force, in fulfilling their role as the JFACC, and the Army, as the ground maneuver force. (Army General H. Norman Schwarzkopf, the theater commander, had not designated any of his

subordinate commanders as the JFLCC, choosing instead to serve in that role himself.)

On 2 August 1990, Iraqi mechanized and armored forces crossed the border and within three days had occupied Kuwait, claiming it as the nineteenth province of Iraq. International condemnation followed immediately and President Bush ordered US forces to deploy to Saudi Arabia with a mission to prevent further Iraqi aggression. Eventually the mission was expanded to eject Iraqi forces from Kuwait to restore the territorial integrity of that nation. By January 1991 two U.S. corps with seven American, one British, and one French division, a Marine Expeditionary Force of two divisions, and a Coalition corps of four divisions joined six carrier battle groups and eleven air wings to accomplish this mission. On 16 January 1991 Operation Desert Storm began with a massive simultaneous air attack throughout the depth of Iraq and Kuwait. The operational objectives of this attack were to first destroy the Iraqi Integrated Air Defense System (IADS) and the Iraqi command and control structure, then to destroy the strategic capability of Iraq to wage war, and then to prepare the battlefield for the eventual ground operations which would eject Iraqi forces from the Kuwait Theater of Operations (KTO).[33]

General Schwarzkopf prioritized the attack of available targets and tasked the JFACC to attack this target set to support the theater operational objectives. In doing this, he placed the responsibility for synchronizing the application of operational fires properly upon the shoulders of the JFACC. He designated the JFACC as the supported commander for theater air operations. However, he also designated the JFACC as a supporting commander for fire support in the JFLCC AO. From the beginning of the campaign, the JFACC had to allocate resources to fulfill both of these requirements. This did not become problematic until after the first two objectives of the air operation were essentially accomplished, two weeks after the

bombing began. The theater focus then shifted to preparation of the battlefield for the ground offensive. General Schwarzkopf's operational objective for this phase of the air operation was the attrition of 50% of Iraqi forces (specifically tanks and artillery systems), which was one of the desired conditions for the commencement of the ground assault.[34]

At this point the corps commanders established their FSCLs to support battlefield preparation for the imminent offensive ground operations. The FSCLs proposed by the corps commanders lay along the berm that ran along the Saudi Arabia-Iraq and Saudi Arabia-Kuwait borders. This was accepted by the JFACC and approved by the JFC on 10 February. However, the JFC made some modifications to the doctrinal application of the FSCL that had existed since 1984. The modifications specified that all fires short of the FSCL must be coordinated closely with the appropriate corps commander, while all fires beyond the FSCL had to be coordinated with the JFACC. The JFC defined coordination as informing and/or consulting with supporting tactical air controllers for deconfliction.[35] Note that this description of the FSCL closely resembles the definition which was eventually adopted as joint doctrine in Joint Pub 3-0 in September 1993.

In effect, the modification to the concept of the FSCL from the doctrinal definition of 1984 took away any direct control by the corps commanders over events past the FSCL, but still within their assigned AO. The FSCL was not used as a permissive fire control measure, but rather it became a restrictive fire control measure for ground forces and a boundary in the eyes of air forces. This meant that the corps commander could not directly influence his deep battle by using organic assets in a responsive manner. Even though he could now see well past the FSCL (the Joint Surveillance Target Attack Radar System (JSTARS) had a range of over 300 kilometers and fed directly to the corps[36]), he could not send Apaches, or fire

ATACMS, MLRS or other artillery systems past the FSCL without approval of the JFACC. This was a time-consuming process which deprived him of the ability to shape his battlefield in both space and time. Air Force representatives claimed that cross-FSCL fires could be cleared in 35-40 minutes, but even this was not acceptable in terms of facilitating the application of effective fires on identified high-priority targets (HPTs). Deconfliction of fires was done by the JFACC's Director of Combat Operations (DCO) after a call from the corps to the Army's BCE at the Tactical Air Control Center (TACC)[37]. Once the DCO was notified, deconfliction took approximately 35-45 minutes.[38] Added to this time was the processing time to get the requested clearance to the corps level and then to get approval back down to the firing unit. Unfortunately, this meant that HPT's with short dwell times[39] could not be effectively engaged.

The modification of the doctrine as discussed above was exacerbated by the other major deviation from established norms for air-ground coordination. Early in Operation Desert Shield, LTG Charles A. Horner, the JFACC, had announced that there would be no BAI subapportionment.[40] Since the 31 Initiatives[41] agreement between the Army and the Air Force in 1984, the Army had expected that a portion of the apportioned AI sorties would be assigned to attack targets identified by the ground forces. While not under the control of the ground forces, they were dedicated support and were an essential part of the corps' and division's deep operations.[42] This procedure was practiced often during joint exercises in Europe, and there was agreement between the services that the procedure worked well. In particular, VII Corps was accustomed to this procedure, since they had deployed to Saudi Arabia from Europe. When LTG Horner eliminated BAI from the air-ground system he took away the bulk of the corps commanders' deep attack assets. This was justified from a theater perspective because the JFC, dual-hatted as the JFLCC, believed he

was accomplishing the objectives of the corps commanders' deep operations simultaneously with the theater objectives of battlefield preparation. The corps commanders, unfortunately, did not share this view.[43]

Corps commanders faced an unenviable paradox. Because the JFACC had eliminated BAI and was flying AI only past the FSCL,[44] then the corps commander could only have direct influence over that area inside the FSCL. This called for the FSCL to be placed out far past the FLOT to allow the corps commander to shape the battlefield as he saw fit. However, if the FSCL was placed out far then there were limited assets that could be applied against a large array of targets between the FLOT and the FSCL. Therefore, before the ground assault commenced, the FSCL was kept very close to the FLOT since no CAS was apportioned until Ground-Day (G-Day). This meant that the Army could only be assured that their targets would be hit if Army assets attacked the target. Using Army assets past the FSCL was difficult and time-consuming because of the requirement for corps commanders to coordinate with the JFACC to fly Apaches or shoot artillery past the FSCL.[45] Thus, the corps commanders did not have direct influence in shaping the battlefield within their AOs until after the ground assault commenced on G-Day.

During the battlefield preparation for the ground attack, the JFACC was trying to continue his attacks against operational targets, while accomodating the support of the upcoming ground operational mission. Thus, he had to prioritize targets given to him by the four corps commanders (since there was no functional JFLCC headquarters, and Third Army as ARCENT and the field army could not, and did not, effectively fill the role of synchronizer for the two army corps, the Marine Expeditionary Force and the Eastern Allied Coalition). Seeing most of the corps commanders' targets as tactically focused, the JFACC generally placed them below his operationally-oriented targets on the priority list.

> ...of an average of 110 Army [target] nominations on any given day, only a couple dozen might appear on the air tasking order (ATO), used to orchestrate daily attacks. Those which were attacked often had been low on the Army's priority list.[46]

The JFACC believed that he was doctrinally correct in doing this. Joint Publication 3-0 states that:

> Interdiction target priorities within the land or naval force boundaries are considered along with theater-wide interdiction priorities by the JFC and are reflected in the apportionment decision. The JFACC will use these priorities to plan and execute the theater-wide interdiction effort.[47]

This situation exacerbated the debate between the Services. The corps commanders saw their target nominations as absolutely critical to the accomplishment of their missions at low cost in terms of casualties. However, the JFACC believed that he was following the intent of the theater commander by prioritizing targets in support of operational objectives above fires planned in support of tactical maneuver.

Further, while Army commanders believed that the ground offensive was an inherent part of the mission assigned to the theater commander, the JFACC did not necessarily share this belief.[48] This sentiment was encapsulated in Air Force doctrine in AFM 1-1, Basic Aerospace Doctrine of the United States Air Force. A professor at the School of Advanced Airpower Studies School summarized the view:

> Air doctrine tends to emphasize the wide-ranging flexibility of power deliverable from aircraft as the key ingredient in war, while land warfare doctrine usually assumes the ultimate need to exert some degree of control over the ground and tends to see air power as a useful, and at times even necessary, supporting force in the performance of this ultimate mission.[49]

From the JFACC's perspective, if continued attack on operational-level targets could accomplish the mission, then this was a better application of resources than support of a ground offensive which may not be necessary and would almost certainly be

costly in terms of casualties. Until General Schwarzkopf made it absolutely clear that support of the ground offensive was the priority, the JFACC continued to strike at the operational-level targets using the priorities given earlier by the theater commander.[50]

The impact of this conflict in priorities between the Services was seen almost immediately, as the priority targets of the corps commanders were not hit until two days before the ground assault began. General Schwarzkopf remained focused on the Republican Guard Forces Command (RGFC) tanks, in order to achieve the desired 50% threshhold. However, the corps commanders, particularly LTG Franks of the VII Corps, who had the mission of attacking deep to destroy the Republican Guard Forces Command, were more concerned with the Iraqi artillery near the border. That artillery could make the initial border crossing and breach operations very challenging and costly in terms of casualties, particularly if they fired chemical rounds. Ground commanders in VII Corps did not feel threatened immediately by the RGFC, and believed that their M1A1's could handle the Iraqi tanks easily.[51] Finally, AI target priorities were shifted to attack artillery near the front lines two days before the ground attack began, but only a fraction of the identified targets could be hit in that short period of time.[52]

The modifications to the concept of the FSCL made by the JFC also constrained the ability of the ground forces to conduct non-linear operations. The 101st Air Assault Division was to assault deep into Iraq on the first day of the ground attack in order to interdict Iraqi lines of communications from the west. However, because of the location of the FSCL and the additional modifications which made it a restrictive fire control measure, planning for air attacks to support the air assault was problematic.

> Two days after [the 101st] division forwarded the [air support requests for the air assault into Iraq] on to [XVIII Corps headquarters], the corps ALO informed the division ALO that the requests had been

> passed on but would not be honored by the TACC. They had determined that since the target area was over 60 miles past the FSCL, the requests should have been for AI rather than CAS.[53]

Eventually common sense prevailed, and many of the targets identified by the planners from the 101st Airborne Division (AASLT) were struck by the Air Force. The issue is more than one of semantics over whether the missions were called AI or CAS. The issue is that the division commander could not be certain that critical targets would be hit because he had no control over AI sorties. Fortunately, sufficient targets were struck so that the air assault could be successful.[54]

The ground attack began on 23 February with artillery and Apache raids, and major units crossed the border on 24 February. To accomodate the rapid movement of ground forces, the FSCL was placed well forward of advancing forces, initially about 50-60 kilometers forward. This allowed the corps commander some flexibility in shaping his maneuver, but there were significant drawbacks to having the FSCL so far forward of the FLOT initially. Placing the FSCL as far out as it was meant that there was a significant portion of his AO that the corps commander could not influence early in the operation. A corps had a limited number of Apaches with relatively slow recycle time and, with the exception of the scarce ATACMS, could not reach more than about twenty kilometers past the FLOT with artillery. The requirement placed on the use of CAS was that the sortie had to be under the positive control of a Tactical Air Control Party (TACP) which accompanied the ground forces in their attack. Therefore, many targets could not be hit because the TACPs were behind friendly troops, and therefore not in position to provide positive control of CAS sorties out to the FSCL.[55] The relatively deep FSCL also limited the flexibility for AI since there were a great many targets that could not be struck because they were inside the FSCL and therefore required close coordination.

On other occasions the rapid pace of the advance resulted in the close proximity of the FSCL to the FLOT, which meant that as ground forces progressed there was little room for maneuver of fires inside the FSCL. Furthermore, since fires could not be placed on targets past the FSCL without coordination, the ground force lost most of its potential for quickly influencing the deep battle. Targets identified by JSTARS and other corps acquisition assets could not be engaged in a timely or effective manner. This mismatch between the new capabilities offered by enhanced intelligence gathering systems, the fire delivery systems available to the corps, and the command and control procedures for coordination of fires was seen many times during Operation Desert Storm. In one instance, a moving MLRS battalion received ten targets which were past the FSCL. Upon arriving in position to fire, they stopped and waited for their fires to be cleared by the JFACC. After waiting for more than an hour, they were finally cleared to fire at only two targets.[56] Though the corps' intelligence capabilities had allowed identification of deep targets, and the fire systems could hit those targets, the command and control procedures did not allow the potential to be realized. Many such missed opportunities occurred during the ground attack.[57]

The other problem associated with a close FSCL was that preplanned CAS missions generally ended up being dedicated by planners against targets past the current FSCL in order to keep pace with the advancing forces. The plannersThis was necessary in order to meet the 48 hour window for the processing of preplanned requests. Those missions ended up being flown as AI missions when the FSCL had not been advanced past the target. The JFACC could then divert them to higher priority theater targets.[58] This meant that the corps commander could not depend upon the effectiveness of CAS missions in facilitating his intent for fires during the

ground offensive. The unintended lesson was that the use of preplanned CAS was not effective, and in fact, was counterproductive at times.[59]

Because of the rapid advance of the ground forces, the corps commanders shifted their FSCLs every six hours, causing confusion among both Army and Air Force units. Because the shifts were made at the call of the corps commanders, there arose discontinuities in the line between the four corps' FSCLs, creating coordination difficulties for air managers. On 27 February, the ground commanders lost control of the FSCL.

> The continuing confusion at CENTCOM level over the moving of the FSCLs and their use by four different corps finally led to the implementation of a CENTCOM FSCL by LTG Horner, the JFACC, which was published in FRAGO 066 at 271900Z by ARCENT and established a Third Army FSCL that moved the final FSCL out to the Kuwaiti coastline, up to the Euphrates River, and on out to the west.[60]

This change meant that there was a continuous FSCL common to all four corps and understood by the JFACC. It did not shift again during the war. Though this simplified things from a theater perspective, it did not increase the effectiveness of joint forces in the destruction of Iraqi forces at the tactical level. According to the VII Corps G-3:

> On 27 February 1991, the Iraqi Army was in disarray and units were fleeing north to escape Coalition forces. In VII Corps' zone, RGFC were loading heavy equipment on trailers to salvage what they could. This presented the perfect opportunity to complete their destruction. The most effective way to do this was by coalition aircraft, but we could not get approval for sorties short of the FSCL. By then the FSCL had been moved out by LTG Horner to the Euphrates River. The JFACC had said that no sorties would fly inside the FSCL without positive control by an air or ground controller from the corps. Since the RG units were beyond the range of corps assets, we could not put eyes on the target. So the RG units got away. This example shows the doctrinal bastardization of the FSCL during Desert Storm. Beyond the FSCL was Air Force territory and no fires could be delivered in that area without clearance by the JFACC. Short of the FSCL was Army territory, and aircraft did not fly inside it unless directed by an air controller.[61]

Another example of the loss of synchronization of joint assets happened as the VII Corps closed with the RGFC. On the night of 26 February, two Apache battalions conducted a deep attack against RGFC units. The target straddled the current FSCL. Because of this, the requested air support to conduct a Joint Air Attack Team (JAAT) strike was not approved by the JFACC.[62] CAS would not fly the mission because part of the target was past the FSCL. AI would not fly the mission because of the detailed integration required of aircraft operating in close proximity to ground forces (to include Army aviation). Instead, the TACC shut off the area completely to fixed wing aircraft to prevent fratricide.[63] Thus, the increased effectiveness of a synchronized attack by attack helicopters, fixed wing attack aircraft, and artillery fires could not be used. This is another example of the use of the FSCL to prevent fratricide, rather than to allow for the simultaneous application of complementary capabilities offered by close integration of joint fires. This clearly does not bode well for the use of the FSCL in future non-linear operations.

Up to this point, the discussion has focused on the tactical perspective of the corps commanders. There were also problems with the FSCL when seen from a theater perspective, through the eyes of the JFACC. The main problem was that it was generally placed out too far by the corps commanders, thus depriving the JFACC the necessary flexibility to strike targets in accordance with the JFC's priorities.

> The Air Force has an excellent capability for [the role of striking quickly identified targets] -- a capability which currently is constrained by placing the FSCL at tremendous depth and then requiring the Air Force to coordinate before attacking short of it. Hunter-killer teams can detect, locate, and destroy certain targets in less time than it takes to request permission for the strike, let alone receive an answer through a hostile electronic warfare curtain.[64]

Not all targets inside the FSCL were identified by the corps commanders as high priority targets. There were some that were of interest only to the JFACC, such as air

command and control sites. However, the JFACC could not direct AI strikes against them because they were inside the FSCL and thus required close coordination, and he could not order CAS sorties to strike them because CAS was controlled by the corps commanders.[65] Thus, the JFACC was constrained in his ability to strike the full set of operational level targets by the same coordination line that constrained the corps commanders in striking the full set of targets of interest to them.

The JFACC believed that he provided sufficient air support to the ground forces. He apportioned some of the available air sorties as CAS to support the ground commanders' tactical objectives after G-Day. However, the JFACC only struck those targets identified by the ground commanders if they supported the JFC's interdiction priorities. From the perspective of the JFACC, this was an effective and efficient use of the available airpower. By not subapportioning any BAI, the JFACC could centrally manage all air sorties (except CAS) and focus them at the appropriate targets to most effectively support the theater operational objectives. But, despite the protests of the corps commanders, the JFACC believed that provisions were made to provide sufficient support to ground commanders in the event that they faced major challenges. For example, both CAS and AI sorties were able to be diverted in flight. The Air Force believed that they had enough sorties available to meet any requirements that may have arisen, and could do so quickly.

> Our data collection suggests that as an average, AI under control of the ABCCC... could be on target within 5-15 minutes of target detection...With respect to CAS, a constant flow of two or four ship flights were scheduled into the battle area. With the command and control capacity to fluidly shift assets from CAS to AI and AI to CAS, this resulted in up to 120 sorties per hour being available for CAS as required. In general this resulted in CAS being supplied from the push flow of CAS or diverted from the interdiction flow by ABCCC/DASC(A) [the Marine Direct Air Support Center] within 5-10 minutes of ASOC/DASC(A) determination to send assets.[66]

Thus, by centrally controlling all theater air sorties, the JFACC could provide responsive airpower to support the requirements of the commanders on the ground, while still maintaining the flexibility necessary to prosecute the operational-level interdiction and strategic attack phases of the air operation in support of the theater commander's intent. The only reason that any sorties had to be released from central control was to allow for detailed integration of CAS sorties with the ground forces. This requirement was only necessary because of the technological and procedural difficulties in air-ground coordination that existed during Operation Desert Storm.

Further, the Air Force believed that the geometry of the battlefield established by the JFACC facilitated rapid shifting of air-delivered fires. The theater of operations was divided into 30 mile square kill zones. This permitted rapid deconfliction of airspace and targeting past the FSCL by the JFACC. But the zones could also be opened by ground commanders short of the FSCL to facilitate procedural command and control of CAS. This would eliminate the unintentional no-fire area that the ground commanders believed existed. However, no corps commanders used the kill zones for this or any other purpose, relying instead on positive control of CAS sorties. This was due in large part to a lack of familiarity by ground forces with the JFACC procedures, and their unwillingness to deviate from the normal practice of fire support coordination.[67] Further, they believed that by opening kill boxes they surrendered the initiative for target selection inside the boxes to the pilots.[68]

From the preceding discussion it is evident that there was significant disagreement between the Army and the Air Force about the use of the FSCL during Operation Desert Storm which caused a degradation in the effectiveness of the application of joint fires to support the JFC's intent. The JFC, with the advice of the JFACC, changed the purpose of the FSCL from existing doctrine which recognized it

as a permissive coordination measure, to a measure far more restrictive nature. Though this different interpretation of the FSCL supported the theater-level prosecution of the campaign, when combined with the elimination of BAI to allow for more centralized control of all air interdiction, it significantly degraded the ability of the ground commanders to integrate all available assets to accomplish missions inside their assigned AOs. While the corps commanders believed that they were not being supported effectively by the JFACC, the JFACC felt that centralized control of all air assets allowed him to attack targets in a manner that best accomplished the intent of the JFC, while still providing sufficient support to the ground commanders. The FSCL, while providing a clear delineation of control authority to allow the JFACC to prosecute air operations, did, however, limit his ability to strike the full set of operational level targets.

Operation Desert Storm was the first mid-intensity war fought in the information age. As such, advancements in technology permitted the introduction of intelligence-gathering and weapons systems which gave ground commanders a capability to fight at the operational level of war. The evidence demonstrates that the FSCL was an impediment to the effective and efficient appplication of the new capabilities. Further, the evolving nature of the battlefield environment toward non-linearity, exemplified during Operation Desert Storm, suggests that the FSCL may not be relevant on the future battlefield.

The debate that began during Operation Desert Storm continues today because joint doctrine, as espoused in Joint Publication 3-0, Doctrine for Joint Operations, published in September 1993, largely embraces the procedures used during that campaign. The next section discusses the main points of contention between the Services that continue in light of the new definition of the FSCL.

IV. THE FUTURE OF THE FSCL

> The problem is straightforward. Airmen, soldiers, sailors, and marines look at the world through their own lenses. Their respective missions, operating environments, experiences, and training all lead to very different perspectives. These perspectives fuel service parochialism and foster interservice rivalries.[69]

Though both the Army and the Air Force have valid positions in the FSCL debate, the fundamental difficulty in settling the argument is one of perspective. The Army, with the corps commanders being the primary actors, look at the issue from a tactical point of view. The immediate task is one of dealing with the enemy at close range, while he is shooting back. This narrows the focus of the commander on the ground. Recent changes in Army doctrine notwithstanding, this focus limits the commander's perspective to tactical operations.[70] The JFACC, with the Air Force as its primary actor, is an arm of the theater commander, who looks at the problem from a theater operational perspective. Because the Air Force bypasses enemy forces that it does not want to deal with, and strikes desired targets directly, it can mass a great deal of combat power quickly, complete the mission, and return to safety. This permits a less restrictive view of the theater. According to the Air Force's basic doctrine, "airmen are not constrained to achieving tactical objectives as a prerequisite to obtaining strategic objectives."[71] While this may be an overstatement of the difference in perspective, a plausible argument can be made that the Army has the dominant role in close operations at the tactical level, while the Air force has the dominant role in deep operations at the operational level, and generally think at that level.

LTG(R) John Cushman explains the position of ground commanders who are looking at the problem from the tactical point of view:

> Army division and corps commanders, citing their abilities to control their own air/land operations and to coordinate those of supporting air, and thinking in terms of [their capabilities], find inconceivable the

> notion that the JFACC directs for them the battle forward of the FSCL. They see deep and near operations as a seamless web of simultaneous activity in which deep operations are crucial to successful close-in fighting and include deception, deep surveillance and target acquisition, communications countermeasures, and interdiction by ground or air fires, ground or air maneuver, special operations forces, or any combination of these. Citing counterfire against deeper enemy artillery positions and electronic warfare to disrupt rearward enemy command and control, they hold that not all actions beyond the FSCL are "deep" operations-- and certainly are not "interdiction," however defined.[72]

By taking away the deep strike air assets that they need to attack deep targets, the JFACC denies the ground commanders the ability to link the close and deep battles. In the minds of the ground commanders, the JFACC can not establish this linkage because he does not have the same perspective as they do.

> ...to the airman "targeting" a bridge for destruction, the timing of its destruction may not seem important. To the land formation commander, who has in mind destroying that bridge just when it will cause the moving enemy the greatest difficulty, timing is all-important. ... If two authorities, air and land, are ever to harmonize and reconcile their approaches to battle, the airman must adopt the land commander's way of looking at the dynamics of the battle-- and the land commander must understand how the airman must operate in his own medium, the air. This kind of air/ land/sea harmony had not been built into the forces that went to Desert Storm.[73]

The problem facing joint doctrine writers now is that the distinction between the two perspectives is becoming blurred. Specifically, U.S. Army doctrine, as written in the most recent version of FM 100-5, Operations, calls for full-dimensional operations by Army forces. This means that Army commanders must look deep, as well as close, to influence the battle at the operational level. Deep operations may have a wholly different set of objectives than close operations, and may even be the main effort.[74] The focus of full-dimensional operations is on enemy functions, such as command and control and the ability to deliver long range fires, rather than on forces. This is what is really meant by non-linear operations. Commanders apply

available combat power across their AOs over time to disrupt or destroy the enemy's combat functions. For example, if a U.S. commander can prevent the opposing commander from exercising positive control over his forces by incapacitating his command and control apparatus, then American ground units will not have to fight a coherent enemy formation in a close battle. In this way the ground commander not only accomplishes his mission, but minimizes friendly casualties as well. In other words, he is applying his available combat power in the most effective and efficient manner possible. This change in doctrine requires a fundamental shift in the Army's perspective, to one closer to the Air Force's operational level perspective.

At the same time that Army doctrine is forcing a shift in its perspective and attitudes, information-age technology is providing high level Army commanders the capability to influence the battle at operational depths. The Army is being equipped with intelligence-gathering and weapons systems which can find and attack the enemy at greater ranges. *Operation Desert Storm* provided only a glimpse of the impact of this significant increase in the lethality of forces available to commanders of corps and higher levels of command.

> Once the ground commander has a target acquisition system, a command and control system, and weapons systems that allow him to attack targets at operational depth, the distinction between the close-in and deep battle will dim. Just as the ground commander has always been an involved participant in CAS and its effects on the close-in battle, he will now desire to play a more active role at the depths traditionally allocated to BAI and AI. As the ground commander acquires assets to employ deep and affect his own destiny, there will be requirements for joint coordination for BAI and AI that are similar to those already in place for CAS.[75]

The Army believes that the concept of the FSCL is still applicable, as long as it is recognized as a permissive fire control measure by the Air Force and the rest of the joint community. Joint doctrine states that the commander can decide whether to use an FSCL within his AO. It should be used only when three conditions are met:

a portion of the deep operations area does not require selective targeting to shape the deep operations fight; the expeditious attack of targets past the FSCL will support ground operations; and the establishing commander is willing to accept possible duplication of effort beyond the FSCL.[76] The evidence presented in this paper supports the claim that these three conditions will almost never exist, because in establishing an FSCL the commander abrogates his authority over a portion of his AO, thus decreasing the effectiveness and efficiencies inherent in unity of command. This means that he is allowing unsynchronized application of combat power inside a portion of his AO. With the attack assets available to him, and a doctrine which emphasizes the careful orchestration of operational fires, this abrogation of authority should never be the case.[77] Thus, to ensure unity of effort, an FSCL should never be used by a commander inside his AO.

The change to the purpose of the FSCL written into the 1993 Joint Publication 3-0 from that seen in earlier doctrinal publications reflects the Air Force position that the FSCL is more than a coordination measure-- it is a *control* measure. From the Air Force's perspective, the purpose of the FSCL is to prevent duplication of effort, but more critically, it facilitates the avoidance of fratricide.[78] To accomplish this, it is equally important to provide central control of all assets both beyond and short of the FSCL. To the Air Force, it is a matter of who can best provide effective command and control for those assets that impact on airspace. Inside the FSCL the ground commander controls all friendly forces because he can best monitor the situation to ensure that there are no friendly forces on the target, or friendly fires in the area which will interfere with the safe passage of aircraft. This requires either positive control of the aircraft (eyes on both the target and friendly forces) or procedural control (verification that the area is cleared of friendly forces). The JFACC must control operations past the FSCL to ensure the safety of friendly forces operating at

that depth because only he has the command and control apparatus to monitor all of the assets (which are predominantly Air Force).[79]

The Air Force's answer to the proliferation of deep attack assets in the Army is that the Air Force should still control the deep battle (defined by them as operations past the FSCL).[80] According to the Air Force, it will have the great majority of deep attack assets and the command and control apparatus to synchronize those assets more effectively than can the ground commander.

> The Air Force believes that all firepower, including missile attack, forward of the FSCL is "air interdiction." It holds that the theater commander should make the JFACC responsible for controlling the overall interdiction effort when aerospace forces provide the preponderance of interdiction capability. Its definition of aerospace means that when tank-killing Apaches strike beyond the FSCL, they should "come under the purview of the JFACC" and that "the same holds true of ATACMS when employed beyond the FSCL."[81]

While this method of ensuring synchronization of deep attack assets deprives the ground commanders of the ability to influence operations as they see fit, from a theater-level perspective it makes sense in terms of unity of effort. According to the Air Force, JFACC control of operations beyond the FSCL allows the most effective application of airpower, as it permits the JFACC to attack the entire operational and strategic target set most directly in a centrally controlled manner.[82] This centralization of control of airpower is one of only two tenets of airpower employment (the other being flexibility of employment). Historical experience, particularly that of the debacle at Kasserine Pass in 1943,[83] has ingrained this tenet into the minds of airpower advocates.

> Offensive air power, like artillery, has to be allotted at the highest practicable level if it is to be fully effective. Whereas long-range artillery can only reach corps-level targets, fighter-bombers have theater-level reach; thus command and control arrangements must reflect this. In the past, air forces have, from time to time, been accused by armies of "never being there when they are needed". But that is easily answered: if the air is not available, it is being used for

> tasks judged by the (often-army) theater commander to be of higher priority.[84]

Indeed, this principle is closely paralleled within the Army. According to then-COL Huba Wass de Czega:

> We Army types should appreciate this [centralization of firepower], especially the artillerymen among us who deplore attachment and espouse the benefits of being able to shift fires rapidly within the division sector to mass at a point critical to the division. This overrides the desires of the hapless brigade or battalion commander who is not at the critical point. His problem can be dealt with later or not at all because it is the division which has to win, not each of its battalions equally. This should imply to corps commanders that they are unequal in the eyes of their commander and his commander up the line.[85]

Though unity of effort is supported from a theater point of view, the current definition of the FSCL does not support unity of effort within a ground commander's AO. A single commander must be in overall charge of assets employed in an area, and that one person should be the commander of the AO. This is consistent with joint doctrine, which recognizes the singular authority and responsibility of the commander of the AO for ensuring synchronization of all assets to common effort.

> Within [assigned] AO's, land and naval operational force commanders are designated the supported commander and are responsible for the synchronization of maneuver, fires, and interdiction. To facilitate this synchronization, such commanders designate the target priority, effects, and timing of interdiction operations within their AO.[86]

Therefore, there exists a discontinuity in joint doctrine. While holding that the commander must have full authority within his entire AO, joint doctrine also espouses the use of the FSCL, which deprives the commander of authority over a part of his AO. Doctrine should facilitate unity of effort at both the theater level and within the subordinate commander's AOs. The JFC must delineate AO's between the various subordinate commanders, rather than allowing an unwieldy subdivision of

coordination authority inside an AO. This delineation must reflect the JFC's intent as well as the capabilities of the various subordinate commands.

Systems are being developed using information-age technology which will permit unity of effort at both the theater level and within the subordinate commanders' AOs by sharing information in real-time. According to the emerging concept for future full-dimensional operations, outlined in TRADOC Pamphlet 525-5, future commanders will have a radically enhanced integrated battlefield information system that will allow them to see rapidly a common picture of the entire battlefield. They can identify targets and order the application of fires against those targets quickly with full integration by a digitized joint target acquisition, hand-off, and strike system.[87] This offers tremendous potential for closer integration of joint capabilities without the need for burdensome, often counterproductive, linear coordination procedures such as the FSCL.

From this discussion, it is evident that there is little likelihood that the different interpretations of the FSCL by the Army and Air Force will be resolved. Though the Army's new doctrine must result in a broader view of the operational continuum by future ground commanders, it is unlikely that soldiers and airmen will share a common perspective of the battlefield in the near future. For this reason, there can be no clear definition of the FSCL that is not subject to different interpretations. But even if the concept of the FSCL were not subject to different interpretations, the FSCL is an impediment to the effective joint application of the new capabilities available to JFCs. This is further compounded by the changing environment of the battlefield toward non-linearity. The effective and efficient application of combat power in a non-linear battlefield environment can only be possible if command and control systems and procedures evolve along with doctrine and technology. The previous discussion of the use of the FSCL during Operation

Desert Storm was an indicator that joint doctrine must be modified in order to meet the requirement for effective and efficient application of joint power. The discussion in this section has shown that Operation Desert Storm was not an anomaly in identifying the issues raised in this paper, but was only the beginning of an irreconcilable debate. Concepts for more effective integration of joint capabilities must be developed. Commanders must have unity of effort within their AOs to ensure effective and efficient accomplishment of the JFC's intent for the theater. As a first step in this process, concepts that attempt to abrogate the authority and responsibility of any commander inside his assigned AO, such as the FSCL, should be eliminated from joint doctrine.

V. CONCLUSIONS AND RECOMMENDATIONS

> The nature of modern warfare demands that we fight as a team. This does not mean that all forces will be equally represented in each operation. Joint force commanders choose the capabilities they need from the air, land, sea, space, and special operations forces at their disposal. The resulting team provides joint force commanders the ability to apply overwhelming force from different dimensions and directions to shock, disrupt, and defeat opponents. Effectively integrated joint forces expose no weak points or seams to enemy action, while they rapidly and efficiently find and attack enemy weak points. Joint warfare is essential to victory.[88]

The purpose of this paper was to analyze the potential for the future use of the concept of the FSCL to determine whether it should continue to be included in joint doctrine. The FSCL was originally designed as a concept to fulfill a requirement for deconfliction of fires between air and ground forces to prevent fratricide. As the concept evolved it became a permissive FSCM to allow the delivery of uncoordinated fires into an area that the ground commander could not reach with his organic fires. The concept has changed over time to become a more restrictive measure, limiting the ability of the commander to influence a portion of his AO directly.

The current definition of the FSCL in joint doctrine is based on the experiences of the United States Armed Forces during Operation Desert Storm, which means that the debate between the Army and the Air Force that emerged in 1991 continues today. Further, it is unlikely that this debate will be settled because these Services have different perspectives on waging war in a theater of operations or war. While the traditional role assigned to the Army makes it the dominant force in close operations at the tactical level, the Air Force has the dominant role in deep operations at the operational level. These traditional roles cause each Service to interpret the concept of the FSCL differently, which makes it counterproductive as a joint doctrinal term because it leads to reduced effectiveness and inefficiencies in the

application of joint fires and the integration of operational fires and operational maneuver.

Operation Desert Storm also served to identify the questionable utility of the FSCL in non-linear warfare. With a joint doctrine and a new Army doctrine that espouse non-linear operations, linear concepts such as the FSCL can only hinder effective and efficient integration of joint capabilities. Further, though the FSCL was at one time an appropriate and necessary control measure because of technological limitations in the areas of communications, coordination, and response time, advances in technology have made the concept of the FSCL irrelevant. The increased capabilities of commanders for fighting at the operational level made possible by information-age technology have made the concept of the FSCL not only irrelevant, but counterproductive.

In essence, the FSCL is being used to deconflict fires on the battlefield, particularly at the operational level, rather than to facilitate the integration of complementary capabilities of joint systems and operations. In fact, the FSCL impedes the JFC from applying joint fires on the battlefield in the most effective and efficient manner possible. Therefore, the fundamental conclusion of this paper is that the FSCL is a concept behind its time and should be eliminated from joint doctrine.

Elimination of the FSCL is a start point to facilitate increased unity of effort in a theater of operations or war. In this regard, theater CINCs can and will develop their own control measures to provide close integration of fires and maneuver. Effective and efficient application of joint fires will be further enhanced by incorporating the following recommendations into future joint doctrine.

1. The JFC should use boundaries, to include forward boundaries, to provide the clear delineation of responsibility and authority among subordinate commanders within his theater of operations. Only by clear delineation of the battlefield can unity

of effort be facilitated. This delineation will result in increased flexibility at the operational level because it allows subordinate commanders to provide unity of effort in their AOs by retaining authority over their entire AOs. It will permit better unity of effort at the theater level because all commanders will be able to execute the JFC's intent within their AOs.

2. To further facilitate unity of effort in the theater, commanders should control all resources employed within their AO. The JFC should ensure that proper resources are provided to subordinate commanders through the apportionment process by identifying who will *control* the apportioned assets. To facilitate the proper apportionment of theater combat power, all fire delivery assets which are flexible enough to be used across subordinate boundaries should be included on an Integrated Tasking Order (ITO). This includes Apaches and ATACMS, as well as cruise missiles and all fixed wing sorties. The Army opposes the integration of Apaches and ATACMS into an ITO because it does not want to lose control of these highly lethal assets. However, as the ATO (or ITO) becomes more flexible and responsive with the increased use of information technology, this apparent loss of control will become less of an issue. Regardless, all assets in a theater belong to the JFC and he has the authority to employ them as he sees fit. The use of a fully integrated ITO will facilitate a greater degree of control, thereby allowing the JFC to apply his resources most effectively and efficiently to accomplish operational objectives..

3. To accomplish the intent of the FSCL, commanders should use other FSCMs, such as No-Fire Areas, Restrictive Fire Areas, and Free Fire Areas, to mold their battlefield.[89] This will allow a more flexible application of fires and maneuver in a non-linear environment, while retaining the flexibility for application in a more traditional linear environment.

4. The advances in information technology should be exploited to permit closer integration of the complementary capabilities provided by the services. This will only be possible if systems are developed jointly. The Army's information sharing architecture must be compatible and interoperable with those being developed by the Air Force, Navy and Marine Corps. With fully integrated information systems, joint commanders can open and close FSCMs flexibly to gain and retain the intiative in a rapidly changing battlefield. The potential of the ABCCC should be exploited to allow for rapidly shifting resources from commander to commander in accordance with the JFC's intent and theater requirements. To serve in this role, ABCCC must be equipped with sufficient communications systems and staffed with officers who have the authority to divert resources from AO to AO.

The FSCL is a concept that no longer serves a useful purpose. Joint doctrine must facilitate unity of effort and integration of joint assets so JFCs can apply available combat power to defeat the enemy in the most effective and efficient manner possible. With the elimination of the FSCL from joint doctrine and the implementation of the recommendations discussed above, the joint community will move closer to realizing its goal of fighting as a team to apply overwhelming force from different dimensions to defeat the enemy decisively.

[1] General of the Army Dwight D. Eisenhower, "Command in War", speech given at the National War College, 30 October, 1950, quoted in Joint Publication 1, Joint Warfare of the US Armed Forces (Washington, DC: Joint Staff, November 1991), frontispiece.

[2] Joint Chiefs of Staff, Joint Publication 1, Joint Warfare of the US Armed Forces (Washington, DC: Joint Staff, November, 1993), 42.

[3] Joint Chiefs of Staff, Joint Publication 3-0, Doctrine for Joint Operations (Washington, DC: Joint Staff, September, 1993), III-48.

[4] COL Stanley F. Cherrie, VII Corps G-3, interview by David J. Zook, 13 April 1992, quoted in MAJ David H. Zook, III, "The Fire Support Coordination Line: Is It Time to Reconsider Our Doctrine?" MMAS Thesis, U.S. Army Command and General Staff College, Fort Leavenworth, KS, 1992, 4.

[5] Joint Publication 3-0, III-14.

[6] GEN John W. Foss, "Airland Battle--Future," Army, February, 1991, 22.

[7] US Army Training and Doctrine Command, "Operational Concept for Airland Battle--Future," (Fort Monroe: HQ, TRADOC, 1990).

[8] GEN Frederick Franks, quoted by MAJ Kevin B. Smith, School of Advanced Military Studies, Fort Leavenworth, KS, 25 February, 1994.

[9] Joint Publication 3-0, IV-11.

[10] Full-dimension operations refer to the application of all capabilities available to an Army commander to accomplish his mission decisively and at least cost across the full range of possible operations. U.S. Army, FM 100-5, Operations (Washington, DC: HQ, U.S. Army, 1993), vi, and Glossary-4.

[11] Joint Publication 3-0, vi.

[12] Joint Publication 3-0, IV-16; FM 100-5, Operations, 2-19; and AFM 1-1, Basic Aerospace Doctrine of the United States Air Force (Washington, DC: HQ, U.S. Air Force, 1992), 12; all have a common definition of air interdiction.

[13] AFM 1-1, 13.

[14] Joint Publication 3-0, GL-5. FM 100-5 further refines the definition by adding that CAS missions require positive identification of friendly forces and positive control of aircraft. FM 100-5, 2-19.

[15] Joint Publication 3-0, II-20.

[16] Websters Third New International Dictionary, 1981.

[17] Headquarters, Combined Forces Command, "Deep Battle Synchronization Doctrine - Korea," Final Coordinating Draft, 3 June 1993, 7.

[18] Quoted by LTC Charles M. Westenhoff, Military Air Power: The CADRE Digest of Air Power Opinions and Thoughts (Maxwell AFB: Air University Press, 1990), 174.

[19] Russell F. Weigley, Eisenhower's Lieutenants (Bloomington: Indiana University Press, 1981), 137-138.

[20] Max Hastings, Overlord: D-Day and the Battle for Normandy (New York: Simon & Schuster, Inc., 1984), 254.

[21] U.S. Army, FM 6-20, Fire Support (Washington, DC: Department of the Army, 1948), 98.

[22] U.S. Army, FM 6-20-2, Fire Support for Divisions and Corps (Washington, DC: Department of the Army, 1961), 30-31.

[23] Harold T. Gonzales, Tactical Air Support of Ground Forces in the Future (Maxwell AFB: Air University Press, 1990), 58.

[24] U.S. Army, FM 6-20-1, Fire Support for Divisions and Corps (Washington, DC: Department of the Army, 1967), 23-24.

[25] U.S. Army, FM 6-20, Fire Support (Washington, DC: Department of the Army, 1977), 3-15.

[26] U.S. Army, FM 6-20, Fire Support (Washington, DC: Department of the Army, 1984), D-5.

[27] Headquarters, U.S. Army Training and Doctrine Command, TRADOC Pamphlet 525-45, "General Operating Procedures for Joint Attack of the Second Echelon (J-SAK)" (Fort Monroe: HQ, TRADOC, 31 December 1984), 1-4 and 2-8. The term BAI referred to air interdiction attacks against land force targets which have a near term effect on the operations or scheme of maneuver of friendly forces, but are not in close proximity to friendly forces; TRADOC Pamphlet 525-45, 2-7.

[28] LTG Merrill A. McPeak, USAF, "TACAIR Missions and the FSCL," Air University Review, September-October, 1985, 71. The BCE is a cell of Army representatives, headed by a colonel, who serves as the liaison with the Air Force. They ensure that Army priorities are addressed and serve as a conduit from the JFLCC to the JFACC.

[29] Joint Chiefs of Staff, Joint Publication 3-09, Doctrine for Joint Fire Support Operations (Washington, DC: Joint Staff, February, 1991), D-8.

[30] Joint Publication 3-0, III-48.

[31] Joint Publication 3-0, IV-20.

[32] Headquarters, U.S. Army Training and Doctrine Command, TRADOC Pamphlet 11-9, Blueprint of the Battlefield (Ft. Monroe: HQ, TRADOC, 27 April, 1990), 12-13.

[33] Rick Atkinson, Crusade (Boston: Houghton-Mifflin Co., 1993), 40.

[34] CENTCOM OPORD 91-001, cited in Zook, 114; and Atkinson, 220.

[35] Zook, 114.

[36] Bruce D. Nordwall, "Highly Integrated System, Versatile Radar Wins Kudos for Joint STARS' Gulf Role," Aviation Week & Space Technology, 24 June, 1991, 49.

[37] Although no subordinate commander was named the JFLCC, the BCE worked for Third Army, the ARCENT headquarters. The TACC is the Air Force equivalent of the Army's Main Command Post. Depending on the size of the theater, it may be at wing level, or numbered air force level. 9th Air Force provided the TACC during Desert Storm, and it worked directly for the JFACC.

[38] LTC Robert E. Duncan, "Responsive Air Support," Air Force Magazine, February, 1993, 15.

[39] Dwell time refers to the expected length of time a given target can be expected to be stationary. Thus targets with short dwell times are highly perishable and must be hit very quickly upon detection or they will be missed.

[40] Author's telephone interview with LTC Robert E. Duncan, Directorate of Combat Plans, 9th Air Force, Shaw AFB, SC, 9 February, 1994.

[41] The 31 Initiatives was an agreement between the Army and the Air Force to settle several unclear issues between the services. It served to delineate responsibilities, particularly in the areas of Close Air Support and Battlefield Air Interdiction.

[42] BG Robert H. Scales, Certain Victory: The US Army in the Gulf War (Washington DC: Office of the Chief of Staff, US Army, 1993), 174.

[43] U.S. Department of Defense, Conduct of the Persian Gulf Conflict, An Interim Report to Congress (Washington, DC: US Government Printing Office, 1991), 2-6 to 2-8.

[44] Kenneth P. Graves, "Steel Rain: XVIII Corps Artillery in Desert Storm." Field Artillery Journal, October, 1991, 55; interview with LTC Duncan.

[45] VII Corps Artillery, "Corps Fires After Action Report (Executive Summary)," 15 March, 1991, 2.

[46] Atkinson, 218-219.

[47] Joint Publication 3-0, IV-23.

[48] Atkinson, 293.

[49] Harold R. Winton, "Reflections on the Air Force's New Manual," Military Review, November, 1992, 29.

[50] This was not done until the third week of February, when the CINC, for the first time, became aware that the corps commanders' targets were not being struck by the JFACC. At that time he assigned LTG Calvin Waller, the DCINC, to chair the Joint Targeting Coordination Board in order to mediate between Army and Air Force interests.

[51] Thomas A. Keaney, "Surveying Gulf War Airpower," Joint Forces Quarterly, Autumn, 1993, 35.

[52] Duncan interview.

[53] MAJ John M. Fawcett, "WhichWay to the FEBA?" Airpower Journal, Fall, 1992, 18.

[54] ibid.

[55] Author's telephone interview with CPT Randall A. Soboul, ARCENT GLO on the ABCCC during Operation Desert Storm, 3 February, 1994.

[56] MAJ Mark S. Jensen, "MLRS in Desert Storm," Field Artillery Journal, August, 1991, 33.

[57] VII Corps Fires AAR, 4.

[58] 1st Cavalry Division, "Executive Summary of Operation Desert Storm", 10 April 1991, 12.

[59] VII Corps Fires AAR, 4.

[60] MAJ Combs, ARCENT G-3, Deep Operations, JULLS # 13359-999000 (0006), quoted by Zook, 137.

[61] COL Stanley F. Cherrie, VII Corps G-3, interview by David J. Zook, 13 April 1992, quoted in Zook, 4.

[62] A JAAT is a highly synchronized operation in which Army attack helicopters and artillery fires are coordinated with Air Force fixed wing attack aircraft so that a very lethal application of fires can be applied to a high-priority target in a short period of time. The use of complementary assets, such as fixed wing attack air and attack helicopters, makes it harder for the enemy to react to the fires of either one or the other.

[63] VII Corps Fires AAR, 3.

[64] CPT Peter M. Ossario, "Beyond the No Bomb Line -- Fire Support Coordination for the 1980's," Military Review, October, 1978, 73.

[65] The difference between CAS and AI is a matter of control, and this was the case during Operation Desert Storm. This is because the distinguishing characteristic for CAS is that it is flown in "close proximity" to ground forces, and requires "detailed integration" with those forces. (AFM 1-1, Volume 2, 106) As stated above, according to the Air Force, detailed integration is possible only if the sortie is controlled by the user. Thus, CAS sorties worked for the corps commanders and reported to the Air Support Operations Centers (ASOCs) co-located with the corps headquarters. AI sorties reported to either the Airborne Warning And Control Systems (AWACS) if they were for deep interdiction or to the Airborne Command and Control Center (ABCCC) for shallow interdiction missions. If the ASOC had no targets for the CAS sortie, control could be passed to the Airborne Command and Control Center (ABCCC) to strike an AI target (generally one nominated by the ground commander). On the other hand, AI sorties reporting to the ABCCC could be diverted to an ASOC to be used as a CAS mission. The ground LNO aboard the ABCCC facilitated the request for diversion. (Soboul interview) Additionally, if the corps commander identified a target past the FSCL, he could pass the target to the ASOC which passed it to the ABCCC. The ABCCC could then divert AI sorties if they were available and the target had a high enough priority. (Duncan, 10-14)

[66] Duncan, 15.

[67] Duncan interview.

[68] Atkinson, 219.

[69] Dennis M. Drew, "Jointness: The Fundamental Problem--A Review of Joint Publication 1," Airpower Journal, Summer, 1992, 59.

[70] COL Thomas A. Cardwell, Airland Combat: An Organization for Joint Warfare (Maxwell AFB: Air University Press, 1992), 69.

[71] AFM 1-1, 15.

[72] LTG John H. Cushman, Thoughts for Joint Commanders (Annapolis, MD: Whitmore Press, 1993), 33.

[73] Cushman, 39.

[74] MG L.D. Holder, "Offensive Tactical Operations," Military Review, December, 1993, 51.

[75] LTC Ralph G. Reece, Operational Fires (Maxwell AFB: Air University Press, 1989), 50.

[76] Joint Publication 3-09, D-9; U.S. Army, FM 6-20-30, Fire Support for Corps and Division Operations (Washington, DC: Headquarters, Department of the Army, 1989), F-3; and Deep Battle Synchronization Doctrine--Korea, 3.

[77] MAJ Jay F. Grandin, "Fire Support Coordination--It's time for a Relook," Field Artillery Journal, February, 1992, 2.

[78] Author's interview with LTC Jay Taylor, USAF, Ft. Leavenworth, KS, 3 February, 1994. LTC Taylor is the Air Force Observer-Controller for Tm B, Battle Command Training Program.

[79] JFACC Primer, 25.

[80] Headquarters, U.S. Air Force, Deputy Chief of Staff, Plans and Operations, JFACC Primer (Washington D.C.: HQ, U.S. Air Force, August, 1992), 25.

[81] Cushman, 33. LTG Cushman's thoughts on this matter come from those stated by the Air Force in the JFACC Primer, cited earlier, but specifically on page 11-12.

[82] JFACC Primer, 24-25.

[83] During the early period of American involvement in WWII, the usual practice was to divide up the available airpower between the ground commanders, who would then employ it as they saw fit. When the Germans attacked the American forces at Kasserine Pass in North Africa in November, 1943, the commanders used their airpower in small packets, as mobile artillery. Unfortunately, the Germans employed their air forces in mass attacks, and virtually destroyed the American air forces. After that the German air forces could attack the ground forces with impunity. This was a harsh lesson in the disastrous consequences of decentralized control of airpower that the Army Air Corps and later, the Air Force, would never forget.

[84] A.G.B. Vallance, "Future Offensive Air Operations," RUSI Journal, Summer, 1991, 26.

[85] COL Huba Wass de Czege, Letter to the Editior, Military Review, January, 1986, 87.

[86] Joint Publication 3-0, IV-22.

[87] Headquarters, U.S. Army Training and Doctrine Command, TRADOC Pamphlet 525-5, Future Full-Dimension Operations, Final Draft (Ft. Monroe, VA: HQ, TRADOC, 25 February, 1994), 3-19.

[88] GEN Colin Powell, Joint Publication 1, iii.

[89] Free Fire Area: A permissive FSCM which identifies a specific area into which any weapon system may fire without additional coordination with the establishing headquarters.

No Fire Area: A restrictive FSCM which prohibits fires or their effects into an area, unless the establishing headquarters approves fires temporarily, or in self-defense against an enemy force inside the NFA.

Restrictive Fire Area: A restrictive FSCM which imposes specific restrictions on fires inside a particular area. Fires which exceed those restrictions can not be delivered without coordination with the establishing headquarters.

See Joint Publication 3-09, Appendix D, and FM 6-20-30, Appendix F for a discussion of these and other FSCMs.

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